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Executive Summary

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16. ABSTRACT

Current copies of the air pollution control regulations of all fifty states, three territories, and twelve local agencies were reviewed for the purpose of compiling information on emission standards, compliance test methods, and continuous emission monitoring, as applied to existing stationary sources. Specific pollutants of interest were opacity SO_2, NO_x, and sulfur compounds other than SO_2. The intent of this review was to identify the assortment of types, formats, and exemptions which prevail in existing SIP regulations for selected sources and pollutants, thereby providing guidance to EPA for writing future continuous emission monitoring regulations. This report is not to be used as an all inclusive reference document for such information.

The primary focus of this review and compilation was the following existing source categories:

continued on next page

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COMPILATION AND ANALYSIS OF STATE REGULATIONS FOR SO_2, NO_x, OPACITY, CONTINUOUS MONITORING, AND APPLICABLE TEST METHODS

EXECUTIVE SUMMARY

EPA CONTRACT NO. 68-01-4146

TASK ORDER 40

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FOREWORD

This research was performed for the Division of Stationary Source Enforcement (DSSE), Environmental Protection Agency under Task Order No. 40, EPA Contract No. 68-01-4146. Mr. Howard Wright, Compliance Monitoring Branch, Division of Stationary Source Enforcement was the EPA Task Manager.

Because this document is a product of the efforts of many individuals, it is impossible to acknowledge each person who has contributed. However, special recognition is given to the fifty states, three territories, and twelve local agencies who provided the information that served as the foundation of this research.

DISCLAIMER

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EXECUTIVE SUMMARY

Current copies of the air pollution control regulations of all fifty states, three territories, and twelve local agencies were reviewed for the purpose of compiling information on a nationwide basis relevant to emission standards, compliance test methods, and continuous emission monitoring, as applied to existing stationary sources. Specific pollutants of interest were opacity, SO_2, NO_x, and sulfur compounds other than SO_2. For the primary focus of this review and compilation, DSSE identified the following existing source categories and associated pollutants for which details of the applicable emission standards are of primary concern:

OPACITY

- Fossil fuel-fired steam generators (FFFSG)
- Portland cement plants
- Catalyst regenerators of fluid bed catalytic cracking units (FBCCU)
- Hog fuel-fired boilers
- Kraft recovery furnaces
- Basic oxygen process furnaces (BOPF)
- Ferroalloy electric submerged arc furnaces

SO_2	NO_x
o FFFSG	o FFFSG
o Sulfuric acid plants	o Nitric acid plants
o Smelters	

Most state and local agencies' regulations contain a provision restricting visible emissions for a generalized, non-specific grouping of sources and equipment herein referred to as "all existing sources". Inclusion of such a broad-based opacity standard within an agency's regulations virtually assures widespread applicability of that visible emission limitation.

Sources not subject to a specific emission standard addressed especially to a select source group are, nevertheless, usually governed by the all-encompassing standard for "all existing sources". The state agencies of New Hampshire and New Jersey together with the Boston local agency were the only agencies of those reviewed that did not have some form of generalized opacity standard for "all existing sources". For this nonspecific source grouping the agencies are rather evenly divided between an opacity standard of 20% and one of 40%. The District of Columbia enjoys the unique distiction of being the only agency to prohibit visible emissions (i.e., 0% opacity) from all existing stationary sources within its jurisdiction. Maryland prohibits visible emissions from existing sources in certain "Areas" of that state. Seven of the agencies surveyed express their visible emissions limitation for this wide-ranged category solely in units of the Ringelmann scale. Table 1 summarizes the variation in the standards for visible emissions from "all existing sources".

Ten of the agencies reviewed provide for no exception to the opacity standard for "all existing sources". The remaining 52 agencies with this type of opacity standard allow some period during which the visible emissions standard may be exceeded. Generally, this exception period for intermittent excursions ranges from 3-5 minutes per hour. In addition to providing for emissions above the standard, some of the agencies specify (1) how high above the standard the emissions may extend as well as (2) how long of a period the emissions may remain above the standard each day. Table 2 summarizes each state's opacity standard, allowable exception and permissible periods above the standard for the generalized category of "all existing sources".

The situations concerning opacity standards for existing Fossil Fuel-Fired Steam Generators (FFFSG) and for existing Hog Fuel-Fired Boilers are very similar. In both cases the agencies rarely use these specific terminologies as the subject source caetgory for a visible emissions standard. Florida is the only agency for which there is a specific opacity standard

for existing FFFSG, and Washington has the only opacity standard addressed specifically to Hog Fuel Boilers. In both instances these kinds of facilities are included within a more general grouping of sources for which an opacity standard has been adopted by an agency. Such source groupings as "fuel burning equipment", "indirect heating equipment" and "combustion installations" are the common denominators used by the agencies from which FFFSG and Hog Fuel Boilers both comprise sub-sets. Under these circumstances 13 states and 3 locals have specific opacity standards capable of being directly translated to FFFSG. Similarly, 12 states and 3 locals have opacity standards directly applicable to Hog Fuel-Fired Boilers. Section II elaborates on the details of these specific agency regulations pertinent to the two source groups.

For the other five categories of existing stationary sources and associated opacity standards of interest to DSSE, the extent of visible emissions standards is rather minimal. Four states (Arizona, Georgia, Minnesota, New York) currently have visible emissions standards applicable to existing Portland Cement Plants. Likewise, four states (Louisiana, Minnesota, New Mexico, Washington) have opacity standards expressly for existing Catalyst Regenerators at Fluid Bed Catalytic Cracking Units (FBCCU). Washington is the only agency with a visible emissions standard prescribed for Kraft Recovery Furnaces. None of the state or local agency regulations contain specific provisions for opacity standards for either existing Basic Oxygen Process Furnaces (BOPF) or existing Ferroalloy Electric Submerged Arc Furnaces. The specifics on the few regulations pertinent to these source categories are detailed in Section II.

The most widespread means used by state and local agencies for specifying SO_2 emission standards for existing FFFSG is either on the basis of heat input, as pounds of SO_2 per million Btu, or in terms of restrictions on the amount of sulfur contained in the fuel. Of the 65 agencies reviewed, 36 agencies specify a $lb/10^6$ Btu standard and 28 agencies define the allowable fuel sulfur content. SO_2 emission standards for existing FFFSG in terms

of concentration, ppm SO_2, or of mass emission rate, lb SO_2/hour, are used to a much lesser extent. Only the states of Arkansas, Maine and Rhode Island are without some form of SO_2 emission limitation on existing FFFSG.

SO_2 emission standards for existing sulfuric acid plants are expressed in terms of lb SO_2 per ton of 100% acid and ppm as SO_2. The most prevalent usage for standards directly applicable to this source category is the lb/ton expression. The units of ppm are used in most cases of a generalized SO_2 emission standard applicable to a variety of industrial processes including sulfuric acid manufacturing. Of the 46 agencies with an SO_2 emission standard applicable to sulfuric acid plants, 25 of those standards are written expressly for that group of affected facilities.

Similar to the units used for sulfuric acid plant emission limitations, emission standards for existing non-ferrous smelters are written in terms of ppm as SO_2 and lb SO_2/hr. In most cases the units of lb SO_2/hr are used when the standard applies specifically to smelters, while ppm is a more commonplace unit for standards restricting SO_2 from a variety of sources. Of the 14 agency emission standards directly addressing smelters, 12 of those standards are expressed in units of lb SO_2/hr while only 2 are written in terms of ppm SO_2. Table 3 is a tabular summary of agency SO_2 emission standards for the source categories of FFFSG, sulfuric acid plants and non-ferrous smelters.

Nitrogen oxides (NO_x) emission standards for existing FFFSG are usually written in terms of lbs $NO_x/10^6$ Btu. All but one of the 16 state agencies with this particular emission standard have used that system of units. Similarly, state emission standards for existing nitric acid plants are usually expressed in units of lb NO_x per ton of 100% acid. Although 2 states have adopted standards in ppm NO_x for existing nitric acid plants, 14 states have adopted the lb NO_x/ton expression as the emission standard for that group of existing facilities. Table 4 is a tabular summary of agency NO_x emission standards for the source categories of FFFSG and nitric acid plants.

Section II of this report contains more of the specific details pertinent to the opacity, SO_2 and NO_x emission standards for these source categories in question.

A rather commonplace provision of visible emission standards is the exception period whereby a source is permitted to intermittently exceed the standard during brief periods of time. Most agencies also have a general, across-the-board provision which allows excess emissions during periods of equipment malfunction and for control equipment maintenance. Of the 65 agency regulations reviewed, only 8 states and 3 locals were lacking some form of regulation which specifically addresses malfunction and/or maintenance occurrences and their associated excess emissions. The majority of these types of provisions are neither specific to a given pollutant nor directed to a given source group.

Almost all of the agencies with malfunction/maintenance provisions require agency notification of such occurrences. Although the information required for notification of a scheduled maintenance shutdown are somewhat universal, the remaining details of malfunction/maintenance provisions are extremely variable. While some agencies require notification within 24 hours, others allow 10 days for notification of malfunctions. Although some agencies have provisions for follow-up reporting of remedial actions, others do not even have a requirement for agency notification upon correction of the incident and termination of the excess emissions. None of the agencies have enforcement provisions directing the affected source operations to be immediately shutdown during malfunction or maintenance events, but a few agencies do have explicit conditions that will allow the source to continue operation either for only a brief time or for an indefinite period of time. Section II of this report summarizes the variation in the agency regulations dealing with malfunctions and scheduled maintenance.

A survey of the extent to which individual state and local agencies have complied with the requirement for provisions of continuous monitoring

regulations in accordance with 40 CFR 51 confirmed that the agencies' status range from one extreme to the other. Some agencies currently comply with all facets of the Part 51 "Minimum Emission Monitoring Requirements" of Appendix P, and in a few cases have more comprehensive regulations than the minimal requirements. Conversely, some agencies have yet to adopt any of the required Part 51 CM provisions. As shown in Table 5, the agencies have been ranked from Class I and IA to Class IV, depending upon the degree to which they currently comply with the specifications of 40 CFR 51, Appendix P. Details of each agency's continuous monitoring regulations are highlighted in Section III of this report. Although most of the agencies which have adopted CM regulations have followed the minimal requirements of Appendix P, a few of those agencies have specific exemptions and/or exceptions peculiar to a given agency's regulations. Those unique characteristics of an agency's CM provisions, such as extended time for compliance, additional sources required to monitor, etc., are also detailed in Section III.

TABLE 1

VARIATION IN VISIBLE EMISSIONS STANDARDS FOR "ALL EXISTING SOURCES"

i.e., NON-SPECIFIC SOURCE CATEGORY

OPACITY STANDARD	STATES WHICH USE	LOCALS WHICH USE
0%	Maryland, District of Columbia	-
10%	-	-
20%	Alabama, Alaska, California, Colorado, Connecticut, Delaware, Florida, Louisiana, Maryland, Massachusetts*, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Mexico*, New York, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Dakota, Tennessee, Vermont, Virginia, Washington, West Virginia*, Puerto Rico	Allegheny Co., Bay Area APCD, Denver, Jefferson Co., Philadelphia*, Puget Sound*, South Coast AQMD
30%	Illinois, Texas	Chicago, Wayne Co.
40%	Arizona, Arkansas, Georgia, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Maine, Mississippi, Missouri, Montana, North Carolina, North Dakota, Oregon, South Carolina*, Tennessee, Utah, Vermont, Wisconsin, Wyoming, Virgin Islands	Dade Co.* St. Louis
**	New Hampshire, New Jersey,	Boston

*Standard written only in units of Ringelmann Scale.

**No visible emissions standard for "All Existing Sources".

TABLE 2

AGENCY-APPROVED VISIBLE EMISSIONS STANDARDS

FOR "ALL EXISTING SOURCES," i.e., NOT SOURCE SPECIFIC

STATE	OPACITY	RINGELMANN	EXCEPTIONS	NAME OF SOURCE CITED
Alabama	20%	#1	#1-#3 min/hr	Stationary Sources
Alaska	20%	-	>20%, 3 min/hr	Industrial Processes
Arizona	40%	#2	-	All Sources
Arkansas	Equiv. #2	#2	#2-#3, 5 min/hr 3 times/day	Existing Equip.
California	20%	-	>20%, 3 min/hr	All
Colorado	20%	-	20%-40%, 3 min/hr	Sta. Air Contam. Sources
Connecticut	20%	#1	<40% or #2, 5 min/hr	Process Sources & All Sources
Delaware	20%	#1	>20%, 3 min/hr & 15 min/24 hr	All Sources
Florida	20% & 40%	#1 & #2	-	All Sources Not Otherwise Covered
Georgia	Equiv. #2	#2	#2-#3, 3 min/hr	All Facilities
Hawaii	40%	#2	#2-#3, 3 min/hr	Existing Sources
Idaho	40%	#2	>#2, 3 min/hr	Existing Sources
Illinois	30%	-	30%-60%, 8 min/ hr, 3 times/day	All Other Emission Sources
Indiana	40%	#2	>40%, 15 min/day	All Sources
Iowa	40%	#2	-	All
Kansas	40%	-	-	Processing of Materials
Kentucky	40%	-	-	Process Operations
Louisiana	20%	-	>20%, 4 min/hr	All Sources
Maine	40%	#2	>40% for 5 min/ hr or 15 min/ cont. 3 hrs	All Sources
Maryland	0%	-	No visible emis-sions	All Facilities
Massachusetts	-	#1	≤#2, 6 min/hr	Stationary Source Other than Incin.
Michigan	20%	#1	20%-40%, 3 min/ hr, 3 times/ day	All Sources
Minnesota	20%	-	20%-40%, 4 min/ hr & 40%-60%, 4 min/hr	Industrial Process Equipment
	20%	-	20%-40%, 4 min/ hr	Existing Facilities, N. C. Regulated
Mississippi	40%	#2	>#2, 15 min/hr 3 times/day	All Sources
Missouri	Equiv. #1 or #2	#1 or #2	#1-#2, #1-#3, #2-#3, for 6 min/hr (varies within state)	All Sources
Montana	Equiv. #1 or #2	#1 or #2	#1-#3 or #2-#3, 4 min/hr	All Installations & All Single Sources
Nebraska	20%	#1	-	All
Nevada	20%	-	>20%, 3 min/hr	All
New Hampshire	-	-	-	-
New Jersey	-	-	-	-
New Mexico	-	#1	>#1, 1 min/30 min	All Sources
New York	-	-	-	-
North Carolina	40%	#2	>40%, 5 min/hr, or 20 min/day	All Sources

TABLE 2 (continued)

AGENCY-APPROVED VISIBLE EMISSIONS STANDARDS

FOR "ALL EXISTING SOURCES," i.e., NOT SOURCE SPECIFIC

STATE	OPACITY	RINGELMANN	EXCEPTIONS	NAME OF SOURCE CITED
North Dakota	Equiv. #2	#2	#2-#3, 4 min/hr	Existing Installations
Ohio	20%	#1	20%-60%, 3 min/hr	All Single Sources
Oklahoma	20%	#1	20%-60%, 3 min/hr 20 min/day	All Sources
Oregon	40%	-	>40%, 3 min/hr	All Sources
Pennsylvania	20%	-	20%-60%, 3 min/hr	All
Rhode Island	20%	-	>20%, 3 min/hr	All
South Carolina	-	#2	#2-#3, 5 min/hr, or 20 min/day	All Sources
South Dakota	20%	#1	20%-60%, 3 min/hr	All Sources
Tennessee	20% or 40%	#1 or #2	>20% or >40%, 5 min/hr, 20 min/ day	All Air Contam. Sources & "Certain Existing Sources"
Texas	30% (5 min ave.)	-	>30%, 5 min/hr 6 hr/10 days	Stationary Flue
Utah	40%	#2	-	All Existing Single Sources
Vermont	20% or 40%	-	>20% or >40%, 6 min/hr; always <60%	Installations
Virginia	20%	-	-	All Sources
Washington	20%	-	>20%, 15 min/ 8 hr	All Sources
West Virginia	-	#1	#1-#3, 5 min/hr	All
Wisconsin	40%	#2	40%-80%, 5 min/ hr, 3 times/day	All Sources Before 4/1/72
Wyoming	40%	-	-	All Existing Sources
D. C.	20%	-	>20%, 2 min/hr 12 min/day	All Sources (>100 TPY)
Puerto Rico	20%	#1	20%-60%, 4 min/ 30 min	Stationary Sources
Virgin Islands	Equiv. #2	#2	>#2, 6 min/hr	All Existing Single Sources
Allegheny Co.	Equiv. #1	#1	#1-#3, 3 min/hr	All Sources
Bay Area APCD	Equiv. #1	#1	>#1, 3 min/hr	All Sources
Boston	-	-	-	-
Chicago	Equiv. #1.5	#1.5	#1.5-#2, 4 min/ 30 min; #1.5-#3, 4 min/hr-soot blowing,etc.	All Sources
Dade Co.	-	#2	>#2, 3 min/hr	All Sources
Denver	20%	-	>20%, 3 min/hr	All Sources
Jefferson Co.	20%			Process Operations
Philadelphia	-	#1	#1-#3, 3 min/hr	All Sources (Except Incin.)
Puget Sound	-	#1	>#1, 3 min/hr	All Sources
St. Louis	-	-	-	-
South Coast AQMD	Equiv. #1	#1	>#1, 3 min/hr	Single Source of Emission
Wayne Co.	-	#1.5	-	All Sources

TABLE 3

UNITS OF AGENCY APPROVED SO_2 EMISSION STANDARDS

STATE	FFFSG	SULFURIC ACID PLANTS	SMELTERS		
			Cu	Pb	Zn
ALABAMA	$lb/10^6$ Btu	lb/ton acid	-	-	-
ALASKA	ppm*	ppm*	ppm*	ppm*	ppm*
ARIZONA	$lb/10^6$ Btu	10% of S in feed*	tons (as S)/day	← 10% of S in feed →	
ARKANSAS	-	-	-	-	-
CALIFORNIA	lb/hr and Fuel S	ppm*	ppm*	ppm*	ppm*
COLORADO	ppm*	ppm*	ppm*	ppm*	ppm*
CONNECTICUT	$lb/10^6$ Btu and Fuel S	lb/ton acid	lb/hr	lb/hr	lb/hr
DELAWARE	$lb/10^6$ Btu	ppm	-	-	-
FLORIDA	$lb/10^6$ Btu	lb/ton acid	-	-	-
GEORGIA	lb/hr*, $lb/10^6$ Btu and Fuel S	lb/ton acid	lb/hr*	lb/hr*	lb/hr*
HAWAII	Fuel S	-	-	-	-
IDAHO	Fuel S	lb/ton acid	-	lb/hr (1 hr. avg.) & tons/7-day period OR ppm and tpd	
ILLINOIS	$lb/10^6$ Btu	ppm*	ppm*	ppm*	ppm*
INDIANA	$lb/10^6$ Btu	lb/hr*	lb/hr*	lb/hr*	lb/hr*
IOWA	$lb/10^6$ Btu (2 hr. avg.)	lb/ton acid (2 hr. avg.)	ppm*	ppm*	ppm*
KANSAS	$lb/10^6$ Btu	-	-	lb/hr (new)	lb/hr (new)
KENTUCKY	$lb/10^6$ Btu	lb/ton acid	ppm*	ppm*	ppm*
LOUISIANA	ppm*	ppm* (3 hr. avg.)	ppm*	ppm*	ppm*
MAINE	-	-	-	-	-
MARYLAND	Fuel S	ppm*	ppm*	ppm*	ppm*
MASSACHUSETTS	Fuel S ($lb\ S/10^6$ Btu)	lb/ton acid	ppm*	ppm*	ppm*
MICHIGAN	$lb/10^6$ Btu, ppm, and Fuel S	-	-	-	-
MINNESOTA	$lb/10^6$ Btu	lb/ton acid	-	-	-
MISSISSIPPI	$lb/10^6$ Btu	ppm*	lb/hr	lb/hr	lb/hr
MISSOURI	$lb/10^6$ Btu and Fuel S	ppm* or lb/hr*	← ppm* or lb/hr* →		
MONTANA	Fuel S	-	lb/hr	lb/hr	lb/hr

TABLE 3 (CONTINUED)

UNITS OF AGENCY APPROVED SO_2 EMISSION STANDARDS

STATE	FFFSG	SULFURIC ACID PLANTS	SMELTERS		
			Cu	Pb	Zn
NEBRASKA	lb/10^6 Btu (2 hr. avg.)	-	-	-	-
NEVADA	lb/hr (as S)	lb/hr* and ppm* (as S)	lb/hr (6 hr.avg.	lb/hr* and ppm* (as S)	
NEW HAMPSHIRE	Fuel S (lb S/10^6 Btu)	lb/ton acid	lb/hr	lb/hr	lb/hr
NEW JERSEY	Fuel S (% S) and ppm	ppm*	ppm*	ppm*	ppm*
NEW MEXICO	lb/10^6 Btu	← lb S/100 lb S in feed →			
NEW YORK	lb/10^6 Btu and Fuel S	lb/ton acid	-	-	-
NORTH CAROLINA	lb/10^6 Btu	lb/ton acid	-	-	-
NORTH DAKOTA	lb/10^6 Btu	-	-	-	-
OHIO	lb/10^6 Btu	lb/ton acid	lb/hr	lb/hr	lb/hr
OKLAHOMA	lb/10^6 Btu (new)	lb/ton acid (new)	lb/hr (new)	lb/hr (new)	lb/hr (new)
OREGON	Fuel S	-	-	-	-
PENNSYLVANIA	lb/10^6 Btu	ppm*	ppm*	ppm*	ppm (2 hr. avg.)
RHODE ISLAND		-	-	-	-
SOUTH CAROLINA	lb/10^6 Btu	lb/ton acid	-	-	-
SOUTH DAKOTA	lb/10^6 Btu	-	-	-	-
TENNESSEE	lb/10^6 Btu (1 hr. avg.)	ppm*	ppm*	ppm*	ppm*
		← (one hour average) →			
TEXAS	lb/10^6 Btu and ppm	lb/hr and ppm	ppm (6 hr. avg.)	ppm ← (2 hr. avg.) →	ppm
UTAH	Fuel S	-	← Tons per month OR % of S fed →		
VERMONT	lb/10^6 Btu and Fuel S	-	-	-	-
VIRGINIA	lb/hr	ppm and lb/ton acid	lb/hr	lb/hr	lb/hr
WASHINGTON	ppm*	ppm*	ppm*	ppm*	ppm*
WEST VIRGINIA	lb/10^6 Btu and Fuel S	lb/ton acid	lb/hr	lb/hr	lb/hr
WISCONSIN	lb/10^6 Btu (new)	lb/ton acid (new)	-	-	-
WYOMING	lb/10^6 Btu	ppm (2 hr. avg.)	-	-	-

TABLE 3 (CONTINUED)

UNITS OF AGENCY APPROVED SO_2 EMISSION STANDARDS

AGENCY	FFFSG	SULFURIC ACID PLANTS	SMELTERS		
			Cu	Pb	Zn
DIST. OF COL.	Fuel S	←	Volume percent (ppm)*		→
PUERTO RICO	Fuel S	lb/ton acid	lb/hr	lb/hr	lb/hr
VIRGIN ISLANDS	Fuel S	-	-	-	-
ALLEGHENY CO.	lb/10^6 Btu	lb/ton acid	ppm*	ppm*	ppm*
BAY AREA APCD	ppm and Fuel S	ppm*	ppm*	ppm*	ppm*
BOSTON	Fuel S	-	-	-	-
CHICAGO	Fuel S	ppm*	ppm*	ppm*	ppm*
DADE CO.	lb/10^6 Btu	-	-	-	-
DENVER	ppm*	ppm*	ppm*	ppm*	ppm*
JEFFERSON CO.	lb/10^6 Btu	ppm*	ppm*	ppm*	ppm*
PHILADELPHIA	lb/10^6 Btu and Fuel S	-	-	-	-
PUGET SOUND	ppm and Fuel S	-	-	-	-
ST. LOUIS	ppm and Fuel S	-	-	-	-
SOUTH COAST AQMD	lb/10^6 Btu and Fuel S	lb/hr and ppm	-	-	-
WAYNE CO.	Fuel S	lb/ton acid	ppm*	ppm*	ppm*

* Emission standard not directly source-related, but in the form used for "All Existing Sources"

TABLE 4

UNITS OF AGENCY-APPROVED NO_x EMISSION STANDARDS

STATE	FFFSG	NITRIC ACID PLANTS
ALABAMA	-	lb/ton acid
ALASKA	-	-
ARIZONA	-	lb/ton acid (2 hr. avg.)
ARKANSAS	-	-
CALIFORNIA	lb/hr	-
COLORADO	-	-
CONNECTICUT	$\frac{\text{lb (as } NO_2)}{10^6 \text{ Btu}}$	lb/ton acid
DELAWARE	$\frac{\text{lb (as } NO_2)}{10^6 \text{ Btu}}$	-
FLORIDA	-	lb/ton acid
GEORGIA	$\frac{\text{lb (as } NO_2)}{10^6 \text{ Btu}}$	lb/ton acid
HAWAII	-	-
IDAHO	-	-
ILLINOIS	$lb/10^6$ Btu	lb/ton acid
INDIANA	$lb/10^6$ Btu	-
IOWA	-	-
KANSAS	-	-
KENTUCKY	-	lb/ton acid
LOUISIANA	-	lb/ton acid
MAINE	-	-
MARYLAND	$lb/10^6$ Btu	$\frac{\text{lb } (NO_x)}{\text{ton acid}}$
MASSACHUSETTS	$lb/10^6$ Btu	ppm*
MICHIGAN	-	-
MINNESOTA	$lb/10^6$ Btu	lb/ton acid
MISSISSIPPI	-	-
MISSOURI	-	-
MONTANA	-	-
NEBRASKA	-	lb/ton and ppm
NEVADA	-	-
NEW HAMPSHIRE	-	-
NEW JERSEY	-	-
NEW MEXICO	$lb/10^6$ Btu	-
NEW YORK	-	-

TABLE 4 (CONTINUED)

UNITS OF AGENCY-APPROVED NO_x EMISSION STANDARDS

STATE	FFFSG	NITRIC ACID PLANTS
NORTH CAROLINA	lb/10^6 Btu	lb/ton acid
NORTH DAKOTA	-	-
OHIO	lb/10^6 Btu	lb/ton acid
OKLAHOMA	lb/10^6 Btu (new)	lb/ton acid (new)
OREGON	-	-
PENNSYLVANIA	-	-
RHODE ISLAND	-	-
SOUTH CAROLINA	-	-
SOUTH DAKOTA	-	-
TENNESSEE	-	lb/ton acid or ppm
TEXAS	lb/10^6 Btu (2 hr. avg.)	ppm
UTAH	-	-
VERMONT	$\frac{\text{lb (as } NO_x\text{)}}{10^6 \text{ Btu}}$	-
VIRGINIA	-	$\frac{\text{lb (as } NO_2\text{)}}{\text{ton acid}}$
WASHINGTON	-	-
WEST VIRGINIA	-	-
WISCONSIN	-	-
WYOMING	lb/10^6 Btu	lb/ton acid (2 hr. avg.)
DIST. OF COL.	lb/10^6 Btu	-
PUERTO RICO	-	-
VIRGIN ISLANDS	-	-
ALLEGHENY CO.	-	-
BAY AREA APCD	ppm*	-
BOSTON	-	-
CHICAGO	-	-
DADE CO.	-	-
DENVER	-	-
JEFFERSON CO.	-	ppm*
PHILADELPHIA	lb/10^6 Btu (2 hr. avg.)	lb/ton acid (2 hr. avg.)
PUGET SOUND	-	-
ST. LOUIS	-	-
SOUTH COAST AQMD	ppm (15 min. avg.)	-
WAYNE CO.	-	-

* Emission standard is for non-specific source category, e.g., "All Existing Sources"

TABLE 5

STATE/LOCAL AGENCY STATUS OF CONTINUOUS MONITORING IMPLEMENTATION FOR EXISTING SOURCES

CLASS I	CLASS IA	CLASS II	CLASS III	CLASS IV	
Indiana	Alabama	California	Connecticut	Alaska	Puerto Rico
Louisiana	Delaware	Iowa	Florida	Arizona	South Dakota
Nevada	Minnesota	Kentucky	Georgia	Arkansas	Utah
North Carolina	Missouri	New Mexico	Massachusetts	Colorado	Vermont
	Nebraska	New York	Rhode Island	District of Columbia	Virgin Islands
Bay Area APCD	Oklahoma		Texas	Hawaii	West Virginia
South Coast AQMD	South Carolina	Jefferson Co.		Idaho	Wisconsin
	Tennessee			Illinois	Wyoming
	Virginia			Kansas	
	Washington			Maine	Allegheny County
				Maryland	Boston
				Michigan	Chicago
				Mississippi	Dade County
				Montana	Denver
				New Hampshire	Philadelphia
				New Jersey	Puget Sound
				North Dakota	St. Louis
				Ohio	Wayne County
				Oregon	
				Pennsylvania	

CLASS DESIGNATION

I - Meets or exceeds minimum requirements of Appendix P (40 CFR 51)

IA - Uses general form of Appendix P, but lacking in content or applicability as prescribed by Appendix P.

II - Details particular CM requirements for one or more Appendix P source categories, but far short of explicit specifications.

III - General CM provisions, usually only identifies pollutant to monitor and associated source category

IV - No provisions for CM of any source categories designated in Appendix P

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OPACITY

- Fossil fuel-fired steam generators (FFFSG)
- Portland cement plants
- Catalyst regenerators of fluid bed catalytic cracking units (FBCCU)
- Wood fuel-fired boilers
- Kraft recovery furnaces
- Basic oxygen process furnaces (BOPF)
- Ferroalloy electric submerged arc furnaces

NO_x	SO_2
o FFFSG	o FFFSG
o Nitric acid plants	o Sulfuric acid plants
	o Smelters

The report is organized into a separate Executive Summary and three volumes. The first volume contains an analysis of state adopted emission standards for opacity, SO_2, NO_x, malfunctions and scheduled maintenance, and continuous monitoring regulations for existing stationary sources. Volume II provides a tabular summary of key components of the applicable emission standards and regulations including source category, minimum source capacity, averaging time of standard, exemptions, etc. Volume III of the report contains the complete text of the regulations cited.

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